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Subject: Vedic Cosmology Accurate Millennia before Newton

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From the Pages of History: Earth's Rotation, its Globular Shape and Gravity

When we talk of the earth going around the sun as it has always done, its globular shape, the different seasons, different lengths of day and night, mind goes back to Galileo and Copernicus, scared to death, holding the truth back lest the fury of the church falls upon them for letting the world know the reality of nature. When one thinks of gravity one thinks of Newton sitting under an apple tree watching an apple fall to the ground and Newton proclaiming "Lo! there is gravity."

If I were to say Hindu philosophers talked and wrote about gravity and the globular shape of the earth centuries before Newton and Galileo and Copernicus, I would not only be dismissed as a "fanatical Hindu communalist" by our "all-knowing-secular intellectuals" but also incur their wrath. And who wants that?

In order to state the truth and make it acceptable to our "all-knowing-secular intellectuals" let me seek the help of a Muslim scholar from Central Asia. Who around 1030 AD wrote a very comprehensive book "Indica" about India -- its literature, its philosophy, its religion, its culture, its languages, its history, its geography, its customs, its sciences including astronomy. I am talking about Abu-Raihan Muhammad Ibn Ahmad Alberuni -- a scholar and a devout genuine Muslim by all standards.

Before I go into what Alberuni wrote let us take some time to find out more about this man -- Alberuni.

In the words of Edward Sachau -- translator of Alberuni's 'Indica':

"Mahmud marched into the country, not without some fighting, established there one of his generals as provincial governor, and soon returned to Ghazna with much booty and a great part of Khiva troops, together with the princes of the deposed family of Mamun and the leading men of the country as prisoners of war or as hostages. Among the last was Abu-Raihan Muhammad Ibn Ahmad Alberuni. This happened in the spring and summer of AD 1017."

**"When he (Alberuni) was brought to Ghazna as a hostage, he enjoyed the reputation of a great 'munajjim' i.e. 'astrologer - astronomer'. By the time he wrote 'Indica' thirteen years later after his involuntary immigration to Afghanistan, he was a master of astrology, both according to the Greek and the Hindu systems.**

"Alberuni felt a strong inclination towards Indian philosophy. He seems to have thought that the philosophers both in ancient India and Greece, held in reality the very same ideas, the same as seem to have been his own i.e. of pure monotheism. He seems to have to have reveled in the pure theories of Bhagavad-Gita.

"There can scarcely be any doubt that the Muslims of later times would have found fault with him for going to such length in his interest for these heathenish doctrines" observes Sachau, but "still he was Muslim, whether Sunni or Shia cannot be gathered from Indica. He sometimes takes an occasion for pointing out to the reader the superiority of Islam over Brahmanical India. He dares not attack Islam but attacks the Arabs."

What was the object of his writing "Indica"?

"The object which the author had in view and never for a moment lost sight of, was to afford the necessary information and training to any one (in Islam) who wants to converse with the Hindus, and to discuss with them questions of religion, science, or literature, on the very basis of their own civilization."

Alberuni came to India with Mahmud and stayed there. He learnt Sanskrit and Hindu literature and sciences and indeed wrote a very comprehensive book about India of those days. As a Muslim he praises the "wonderful exploits of Mahmud" saying: "Mahmud utterly ruined the prosperity of the country, and performed those wonderful exploits, by which the Hindus became like atoms of dust scattered in all directions" but as a scholar he laments "this is the reason, too, why Hindu sciences have retired far away from

those parts of the country conquered by us, and have fled to places which our hand cannot yet reach, to Kashmir, Benares, and other places."

It seems from above that his study was done in area which was under Mahmud's control, most likely western Punjab. But still what he writes is very illuminating. Let us now see what wrote about our subject: astronomy in India and gravity and the solar system.

Quoting from Brahmagupta's Brahmasiddhanta, Alberuni wrote:

"Several circumstances, however, compel us to attribute globular shape to both the earth and the heaven, viz. the fact that the stars rise and set in different places at different times, so that, e.g. a man in Yamakoti observes one identical star rising above the western horizon, whilst a man in Rum at the same time observes it rising above the eastern horizon. Another argument to the same effect is this, that a man on Meru observes one identical star above the horizon in the zenith of Lanka, the country of demons, whilst a man in Lanka at the same time observes it above his head. Besides all astronomical observations are not correct unless we assume the globular shape of heaven and earth. Therefore we must declare that heaven is a globe, and the observation of these characteristics of the world would not be correct unless in reality it were a globe. Now it is evident that all other theories about the world are futile."

Earlier philosophers like Aryabhata, Vasishtha and Lata had also come to the same conclusion and Alberuni goes on to quote Varaha Mihira:

"All things which are perceived by the senses, are witness in favor of the globular shape of the earth, and refute the possibility of its having any other shape."

On the subject of the rotation of the earth Alberuni writes:

"As regards the resting of the earth, one of the elementary problems of astronomy, which offers many and great difficulties, this, too, is a dogma with the Hindu astronomers. Brahmagupta says in the Brahmasiddhanta: 'some people maintain that the first motion (from east to west) does not lie in the meridian, but belongs to the earth. But Varaha Mihira refutes them by saying: If that were the case, a bird would not return to its nest as soon as it had flown away from it towards the west.' And, in fact it is precisely as Varaha Mihira says." **Alberuni agrees with Varaha Mihira that earth does not rotate (divya 's comments ; as was Ptolemy and William Lilly who was Queen Victoria's astrologer and was accepting Ptolemy).**

**Alberuni goes on to quote Brahmagupta (who believed in a rotating earth ):**

**"The followers of Aryabhata maintain that the earth is moving and the heaven resting.** People have tried to refute them by saying that, if such were the

case, stones would and trees would fall from the earth. Brahmagupta does not agree with them, and says that that would not necessarily follow from their theory, apparently because he thought that all heavy things are attracted towards the center of the earth. He says: 'On the contrary, if that were the case, the earth would not vie in keeping an even and uniform pace with the minutes of heaven, the pranās of the times.'"

**Alberuni does not agree with Brahmagupta and is unable to understand (accept) the rotation of the earth and goes on to write:**

"Supposing this to be true, and that the earth makes a complete rotation eastward in so many breaths as heaven does according to his (Brahmagupta's) view, we cannot see what should prevent the earth from keeping an even and uniform pace with heaven."

**Stubbornly he (Alberuni) refuses to accept the theory of the rotation of the earth and goes on to say: "Besides, the rotation of the earth in no way impair the value of astronomy, as all appearances of an astronomic character can quite as well be explained according to this theory as to the other (my comments; heliocentricity or geocentricity, both have the same mathematical observations such as angles, distances from earth, speed in the sky, etc.. ). There are, however, other reasons which make it impossible."**

Alberuni says he also has written a book on this subject in which we have surpassed our predecessors' but does not tell what his theories are.

On the question of gravity and other issues like top and bottom, high and low, Alberuni quotes Brahmagupta and says:

"Scholars have declared that the globe of the earth is in the midst of heaven, and that Mount Meru, the home of Devas, as well as Vadavamukha below, is the home of their opponents; the Daitya and Danava belong to it. But this below according to them is only a relative one. Disregarding this, we say that the earth on all its sides is the same; all people on earth stand upright, and all heavy things fall down to the earth by a law of nature, for it is the nature of the earth to attract and to keep things, as it is the nature of water to flow, that of fire to burn, and that of wind to set in motion. The earth is the only low thing, and seeds always return to it, in whatever direction you may throw them away, and never rise upwards from the earth."

Varaha Mihira explains it further:

"Mountains, seas, rivers, trees, cities, men, and angels, all are around the globe of the earth. And if Yamakoti and Rum are opposite to each other, one could not say that the one is low in relation to the other, since low does not exist. Every one speaks of himself, 'I am above and the others are below,' whilst all of them are around the globe like the blossoms springing on the branches of a Kadamba-tree. They encircle it on all the sides, but each individual blossom has the same position as the other, neither one hanging downward nor then other standing upright." He emphasized: "For the earth attracts that which is upon her, for it is the below towards all directions, and heaven is the above towards all directions."

Now these were the thoughts of Hindu philosophers as recorded by Alberuni in the early part of the eleventh century and these had not changed for centuries. **Alberuni quotes heavily from Brahmagupta whose Brahmasiddhanta was composed in AD 628. But it was Aryabhata, born in AD 476, the first to hold that the earth was a sphere (the Surya Siddhanta declared this long before) and rotated on its axis and that the eclipses were not the work of Rahu but caused by the shadow of the earth falling on the moon. His Aryabhatiya was composed in AD 499.(so it was His first deviation from vedic conclusion about earth rotation)**

**It is clear from above that it was over a millennium before Galileo, Copernicus and Newton that the Hindu philosophers had formulated the theories about the globular shape and (speculated about ) the rotation of the earth and gravity.**